causation of epidemics of typhoid fever. His experience of six years in South Africa has led him to believe that, in the great majority of cases, the cause is to be found in a polluted water-supply. He does not deny the possibility of air-borne typhoid, but points out that if dust infection were a predominating or even an important cause of typhoid fever, one would expect to find the disease most prevalent from shortly after the beginning of the dusty season until shortly after its close; but he notes, as a matter of fact, that it is during this very period that typhoid fever is least prevalent. On the other hand, it is during the wet season, when, on account of heavy rain, there is no dust, that the disease is most prevalent. Although conceding the possibility of the transmission of typhoid fever by flies, he points out that, in South Africa, flies begin to be troublesome long before typhoid fever prevails, and continue to be so long after its subsidence. In answer to the criticism that typhoid fever prevailed among the British troops in spite of the fact that filters were provided, he asserts, of his own knowledge, that the filters were not generally used, and that where the commanding officer of a regiment enforced the use of filters the number of cases in that particular body was insignificant.

SCHÜDER (*Zeitschrift für Hygiene und Infectionskrankheiten*, Band xxxviii., p. 343) has collected reports of 650 epidemics of typhoid fever in all parts of the world, of which 377 occurred in Germany, 140 in England, and 66 in France. It appears that 70.8 per cent. of these were due to contaminated water, 17 per cent. to contaminated milk, and 3.5 per cent. to other foods. In reality, water as a cause preponderated even more than is here shown, since even among those attributed to milk and other foods, as oysters, etc., it is probable that in some instances a polluted water may have been a contributing if not the main cause. Speaking also of the transmission of the disease from person to person, he takes as a measure of the danger the relation between the whole number of cases in certain hospitals and clinics and the number of cases occurring among the nursing staff and among other patients. Of 35,647 cases of the disease, 1179—that is to say, 3.3 per cent. —occurred among the nursing staff and other patients; of 23,554 cases in the Prussian military hospitals during the period 1881-1897, 1012, or 4.3 per cent., were among the personnel of the hospital; and 478—that is to say, 2 per cent.—among patients who were present on account of other sickness. The vehicle of infection is chiefly the discharges, and particularly the urine, of those sick and convalescent. He recommends the protection of the nursing body by antityphoid inoculations, according to the method of Marsden and Wright.

Preservation of Meat by Means of Borax.—VAUGHAN and VEENBOER (*American Medicine*, March 15, 1902, p. 421), experimenting with borax on meat, found that meat not treated with borax, and kept at ordinary temperatures, becomes slimy within a few days. From the surfaces of specimens so kept they isolated twenty different species of micro-organisms, fourteen of which were peptonizing bacteria. Inasmuch as it is the usual practice to wash meats so treated as soon as they arrive at their destination, they see no objection to this use of borax; and it would appear reasonable and proper to allow the practice, provided the preservatives do not penetrate the meat to any considerable extent. Since the announcement of the German Government of its intention to enforce, on and after October 1, 1902, the law prohibiting the importation of meats to which borax or any other of a number of preservative salts has been applied, Virchow, who is very strongly opposed to such action, has made known that for years he has taken a daily dose of borax with apparent benefit, and that since reaching his eightieth birthday he has doubled the dose.

The law goes much further than merely to prohibit preserved meats. It deals most minutely with the whole subject of slaughtering and meat-inspection. One of the sections regarding the importation of dressed meats requires that they shall be in the form of whole carcasses. Carcasses of hogs and beeves may be split, but the halves must be left together, and must be accompanied by the head, lungs, heart, and kidneys. Cow beef must be accompanied also by the udder, and the carcasses of hogs must include the tongue. No piece of meat preserved by any of the permitted processes shall be allowed entrance if it weighs less than 4 kilogrammes (8.8 pounds), except hams, bacon, and intestines.

Tuberculosis, Human and Bovine.—Koch's denial of the identity of human and bovine tuberculosis has not passed unchallenged in Berlin. MAX WOLFF has induced the *grapes* or *perlsucht* in a calf by inoculation with materials taken at the autopsy of a patient in the wards of Professor von Leyden, suffering from primary ulcerative intestinal tuberculosis, with miliary granulations on the peritoneum and in the spleen, but without any lesions in the lungs or bronchial glands. In another experiment, in which he used the sputa of a tuberculous patient, the results were somewhat equivocal; and Möller failed altogether in his attempts—whether by inhalation, injection, inoculation into a wound, or injection of human tubercle in the form of living cultures—to excite general tuberculosis in the ox, the infection remaining localized when it occurred at all.

[But no number of negative results can disprove well-established positive cases so clear as to present all the conditions of experiments proving the communicability of tuberculosis through the milk of diseased cows. Such was the case of the thirteen previously healthy girls in the school of Les Dames lanches, at Chartres, reported by Dr. Ollivier; and Dr. Nocard's, of the daughter of a medical man at Berne—a remarkably fine girl, who died of extensive primary intestinal tuberculosis. In both these instances the infection was clearly traced to the consumption of milk from cows with tubercle of the udders. Dr. Koch has found that bovine tuberculosis is more virulent than human to rodents and monkeys, and why not to man also? The bacillus acquires greater virulence in the bodies of some animals and loses it in others, and all that Koch has proved is that the cow has little to fear from man, while man has much to fear from her—more, indeed, than from his own kind. This phenomenon may be connected with difference of body temperature, that of the cow being normally 101° to 102° F.; and in the one recorded instance of tuberculosis in fish it was found that the bacilli had lost all virulence to warm-blooded animals, though originally derived from a human source.—E. F. W.]